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J.C.H.  
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PATENT APPLICATION  
U.S. Serial No. 09/714,424  
ATTORNEY'S DOCKET NO.: 1836-001630

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 1732 :

In re application of : HIGH PERFORMANCE  
MICROCELLULAR FOAM AND  
Carl J. SERMAN et al. : MANUFACTURING METHOD AND  
APPARATUS THEREOF

Serial No. 09/714,424 :

Filed November 16, 2000 :

Examiner: Allan R. Kuhns

Pittsburgh, Pennsylvania  
February 3, 2003

**DECLARATION OF BRIAN D. PATTEN UNDER 37 C.F.R. § 1.132**

Commissioner for Patents  
Washington, D.C. 20231

I, Brian D. Patten, hereby declare as follows:

1. I am currently Product Manager at C.U.E., Inc., where I am responsible for oversight of sales, marketing, customer service, and new product development of urethane products manufactured by C.U.E., Inc. for use in the global corrugated container industry. I attended Pennsylvania State University where I received an A.S. in mechanical engineering technology and a B.S. in business management.

2. I am familiar with the subject matter of the above-identified patent application, U.S. Serial No. 09/714,424, entitled "High Performance Microcellular Foam and Manufacturing Method and Apparatus Thereof."

3. Our laboratory conducted a scientific analysis in order to compare the useful life of a No Crush Microcellular Urethane Foam (MC Foam) construction to that of a No Crush Wheel made with traditional solid cast urethane construction.

Scope: One MC Foam sample wheel and one solid cast urethane wheel from a leading competitive supplier, Wagner Industries, were installed on a testing machine that simulates the application load cycle of the machines the wheels are normally used on for production of corrugated containers, i.e. a Flexo Folder Gluer or Rotary Die Cutter. Both wheels were run until visible permanent physical failure of the wheel was evident, which is standard industry practice for determining the useful life of urethane wheels.

Test Setup: The two wheels were mounted tangent to a rotating cylinder equipped with segments replicating the corrugated cases. The segments were of the same length and thickness as typical corrugated board classified as "b flute." The cylinder was then rotated at a constant speed equal to the normal operating speed of standard industry machinery. Both wheels were checked daily for signs of failure.

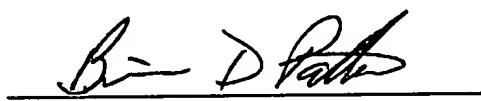
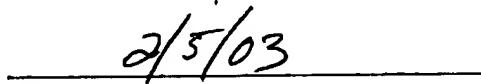
Results: The solid cast urethane wheel (Wagner Industries) was removed after approximately 52 million cycles. The wheels exhibited fractures to the internal ribs, which is the primary mode of failure for wheels of this construction. At this point in the test a second solid cast urethane wheel was installed on the test machine and the test was restarted with the original MC Foam wheel continuing in the test.

The second solid cast wheel tested was removed after 70.1 million cycles. This second wheel exhibited similar failure of the internal ribs as the first. The test was restarted with a third solid cast wheel installed and the original MC Foam wheel still in place.

The MC Foam wheel was removed at 133.3 million cycles. The MC Foam wheel exhibited permanent deformation to the outside surface. While the wheel probably would have continued service had it been installed on an actual production machine, the deformation was extensive enough to be classified as the start of failure.

Conclusion: The No Crush MC Foam Wheel construction exhibited approximately twice the useful life compared to the solid cast urethane construction when subjected to identical operating conditions.

4. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

  
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Brian D. Patten  
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(date)